CLASSIFICATION RESTRICTED **RESTRICTED**
SECURITY INFORMATION
CENTRAL INTELLIGENCE AGENCY
INFORMATION FROM
FOREIGN DOCUMENTS OR RADIO BROADCASTS

REPORT
CD NO.

STAT

COUNTRY	Yugoslavia	DATE OF INFORMATION	1950
SUBJECT	Economic - Nonferrous metals, industry		
HOW PUBLISHED	Monthly periodical	DATE DIST.	7 Jan 1952
WHERE PUBLISHED	Ljubljana	NO. OF PAGES	3
DATE PUBLISHED	Aug - Sep 1950		
LANGUAGE	Slovenian	SUPPLEMENT TO REPORT NO.	

THIS IS UNEVALUATED INFORMATION

SOURCE Industrijski Vestnik, Vol V, No 8-9, 1950.

USE OF BERYLLIUM SOURCES IN YUGOSLAVIA

Dr Teodor Serisaj

Recently published data show that Yugoslavia has sufficient ore from which to produce beryllium. Yugoslav sources, however, treat beryllium only as an important ingredient for the production of high-quality steel and do not mention the fact that beryllium forms important alloys with copper, aluminum or magnesium; nor do they mention the importance of beryllium oxide for the production of high-quality porcelain for electrical engineering use. As domestically available raw materials, they list only kaolin, white bauxite, feldspar, and orthoclase. Deposits of extraordinarily pure feldspar are near Prilep; in Dobra on the Danube are deposits of orthoclase; and near Strumica there are huge deposits of pegmatite.

Recent Yugoslav technical literature (as late as 1949) mentions beryllium only as an alloy of steel. The conclusion is that the technical use of beryllium is still unknown in Yugoslavia, as may also be concluded from occasional articles on the subject in the Yugoslav daily press.

Since Yugoslavia has large quantities of minerals from which beryllium can be extracted, the future development of applied science, industry, and the economy requires that Yugoslav professional men become acquainted, in theory and practice, with the present technical uses of beryllium in the West.

W. R. Jones' Minerals in Industry, and John Fisher in his article in the April 1946 issue of National Geographic magazine, show that it is possible to extend the use of beryllium to the production of alloys with copper, aluminum, and magnesium. Yugoslavia can not only produce these metals in great quantities but can also produce the beryllium oxide for high-quality porcelain.

RESTRICTED

CLASSIFICATION RESTRICTED

STATE	X	NAVY	X	NSRB		DISTRIBUTION													
ARMY	X	AIR	X	FBI		AEC	X												

STAT

On the basis of Jones' book and the data on mineral resources appearing in the domestic press, Yugoslavia should search for beryl in the huge deposits of pegmatite near Strumica in Macedonia, in the deposits of feldspar near Prilep, and in the deposits of potassium feldspar in Dobra on the Danube.

Dr Fran Tucan, professor of Zagreb University, in his book Mineralogija in geologija za visje razrede srednjih sol (Mineralogy and Geology for the Higher Grades of Secondary Schools), 1947, writes that the appearance of beryl is connected with pneumatolytic processes. Beryl is a characteristic ore in pegmatite veins, where it is accompanied by quartz (usually smoke-colored), by silicates, and particularly amazonite, topaz, tourmaline, mica, apatite, and others. It is also found in crystalline shales, particularly in micaceous shales. In Yugoslavia, it is found in the pegmatite granites at Motajica in Bosnia.

Because of the importance and rarity of beryl, it will probably be necessary to draw on people's organizations to search for it, as was done by the Witt expedition in India. Trained young Indians taught the farmers to distinguish between ore and other rocks and how to select places in which to look for beryl. The mining equipment was very primitive: a hammer, a steel [illegible] for drilling, and a broad hoe, but the results were surprisingly good. The people's organizations could do the same in Yugoslavia. To make this project successful, it would be necessary to pay each collector an adequate price or bonus for the ore he brought in.

Smelters and metallurgists will have the responsibility of finding the best methods for extracting beryllium and producing alloys, particularly with nonferrous metals and magnesium, since there is enough magnesite in Yugoslavia.

The technical literature, particularly that of the US, should be examined since the production of these alloys has been most successfully developed there and since the information on beryllium is probably not secret, except as it affects atomic fission and atom-bomb production. Yugoslavia could begin experiments in the laboratory of the plant in Lozovac and in the metallurgical laboratory in Zagreb. Experiments in the use of beryllium oxide for the production of porcelain could be carried out in the porcelain plant in Novi Sad. This plant has, as far as is known, already experimented with feldspar, and there is no reason why it could not begin experiments in substituting beryllium oxide for feldspar.

Before long, Yugoslavia should be able to begin the production of beryllium-copper, beryllium-aluminum, and beryllium-magnesium alloys, and machine parts from these alloys. It will also be possible to make equipment from beryllium-copper and perhaps other beryllium alloys for those plants in which there is danger of explosion, such as coal mines, explosives plants, petroleum refineries, liquid-fuel warehouses, etc. The quality of products, the durability of machines, vehicles, tools, etc., will thus be improved and the safety margin in dangerous occupations increased by reducing the number of accidents. The use of beryllium oxide for the production of high-quality electrical porcelain may limit considerably the need for importing such materials and may even make possible their export.

Beryllium alloys with nonferrous metals could easily become items for export in a semifinished state. With the development of industry, it will be possible to export finished products, especially tools for use in plants subject to danger of explosion.

The Yugoslav motor industry, particularly the "27 Mart" Plant in Novi Sad, is capable of producing piston rings for the main types of vehicles. Production, however, is not satisfactory, either in variety or in quality. Some repair shops,

STAT

therefore, make their own piston rings but their durability is poor and results in low mileage. This is so because they are produced uneconomically and improperly, using low-grade material which does not meet specifications. Domestic piston rings last hardly 40,000 kilometers, with the result that much of the working potential of Yugoslav vehicles is lost while they are undergoing repair. These piston rings cause increased fuel and oil consumption. The waste of lubricant averages 0.5 kilograms per 100 kilometers in trucks and 0.305 kilograms per 100 kilometers in passenger cars. Consequently, there is a waste of 910 tons annually. The waste of fuel averages from 3 to 4 kilograms per 100 kilometers for trucks, and from one to 2 kilograms per 100 kilometers for passenger cars. This amounts to a waste of 5,000 tons annually. At a price of 2.50 dinars per kilogram for gasoline and 10 dinars per kilogram for engine oil, the waste amounts to 20 million dinars.

The best material for piston rings is beryllium-copper, and this fact alone makes it imperative that Yugoslavia do everything necessary to utilize domestic deposits of beryl.

- E N D -